

9.0μm High-Power Benchtop FP-QCL Mid-Infrared Quantum Cascade Laser QCL9000FP (Benchtop Light Source)



● Product Description

The QCL9000FP-9.0μm high-power desktop FP-QCL mid-infrared quantum cascade laser is a mid-infrared testing laser developed by Idealphotonics in the first half of 2019. Its low loss in the atmospheric window makes it suitable for space optical communication testing and research. Our desktop light source offers high power and does not require ITAR review, making it an excellent choice for commercial mid-infrared testing light sources. With a tunable range of over 100nm and an output power greater than 400mW, it meets the industrial testing needs of our customers. Our laser features built-in ZnSe collimation for stable output power, with superior temperature and wavelength stability, far surpassing the stability of traditional high-power quantum cascade lasers by several orders of magnitude

● Part Number

LDC-MIR-QCL-W9000-1-FP-0400

● Product features

High power、 Compact structure、 Software intelligent control、 Built-in FPGA

● Application area

Mid-infrared test light source、 Mid-infrared device analysis

Parameters

Parameters

Parameters	Unit	Technical Specification		
		Min.	Typ.	Max.
PN#		QCL9000		
Output Power 1	mW	350	-	500
Peak Operating Wavelength 2	um	8.9	9.0	9.1
Spectral Width (FWHM)	nm	-	3	-
Output Side-Mode Suppression Ratio (SMSR)	dB	30	-	-
M ² Factor			<1.2	
Output Beam Divergence Angle	Mrad		<2	
Output Isolation	dB	-	30	-
Wavelength Temperature Coefficient	nm/°C		0.6	
Wavelength Current Coefficient	nm/mA		0.2	
Output Power Stability (15 minutes) 4	%	-	±0.5	±1.0
Output Power Stability (8 h)	%	-	±1.0	±2.0

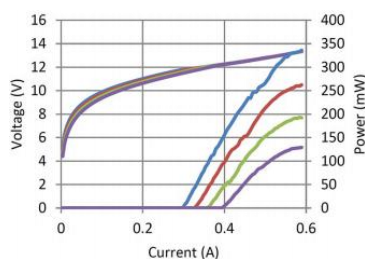
Output Power Adjustment Range	%	0	-	100
Output Power Control Mode		Software Control		
TEC Stability	°C	-	±0.1	±0.2
TEC Working Range	°C	0	30	50
Operating Voltage	VAC	100	220	240
Electrical Power Consumption: 5	W	-	-	2
Operating Temperature	°C	0	-	55
Storage Temperature	°C	-20	-	65
Dimensions	mm	343(L)×193(W)×180(H) Benchtop		

Technical Specifications Explanation

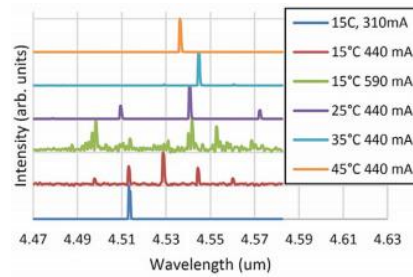
1. Output power is selectable.
2. Peak operating wavelength is selectable.
3. Output power stability test conditions are at 25°C, with a 30-minute warm-up after power-on.
4. Maximum power consumption refers to the overall power consumption under extreme operating conditions.



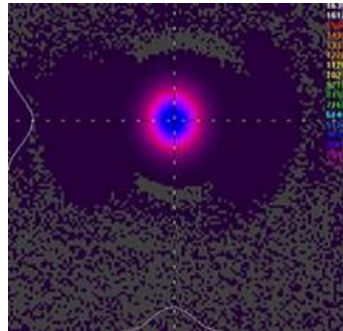
QCL laser characteristic curve (4.6µm typical wavelength as an example) output power characteristic curve.



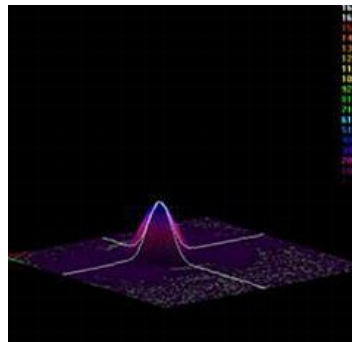
Laser spectrum (continuous)



Spot analysis



2-D Beam Profile at 1778 mm (70.0 in)



3-D Beam Profile at 1778 mm (70.0 in)

PN#/Ordering info

MIR-QCL- W□□□□ -☆-△-XX

W□□□□: Wavelength

4000: 4000nm 4600: 4600nm 9000: 9000nm

☆ : Collimated output

1: With

0: Without

△ : Laser type

FP: QCL-FP

DFB: QCL-DFB

XX: Output power

001=1mw

010=10mw

400=400mw

1000=1000mw

CW Distributed Feedback (DFB) Quantum Cascade Laser

* Center wavelength measured at T = 15°C under continuous wave

* Center wavelength tuning range: +/- 0.03 μm

* Other center wavelengths are listed in the table +/- 100 nm We can provide screening services

* Other center wavelengths can be customized, minimum order quantity: 5 pieces

The wavelengths we can currently provide are as follows*

Wavelength (μm)	Wave number(cm^{-1})	Output power(mW)	Wavelength (μm)	Wave number(cm^{-1})	Output power(mW)	Wavelength (μm)	Wave number(cm^{-1})	Output power(mW)
4.22	2370	> 50	6.25	1600	> 100	9.38	1066	> 100
4.28	2336	> 50	7.15	1399	> 100	9.47	1056	> 150
4.32	2315	> 50	7.26	1377	> 100	9.49	1054	> 150
4.34	2304	> 50	7.32	1366	> 100	9.52	1050	> 200
4.45	2247	> 80	7.37	1357	> 100	9.56	1046	> 200
4.48	2232	> 80	7.43	1346	> 150	9.63	1038	> 150
4.53	2208	> 150	7.57	1321	> 150	9.66	1035	> 100
4.56	2193	> 150	7.61	1314	> 150	9.68	1033	> 100
4.59	2179	> 150	7.75	1290	> 300	9.72	1029	> 100
4.61	2169	> 100	7.78	1285	> 300	9.95	1005	> 100
4.72	2119	> 100	7.80	1282	> 300	10.24	977	> 150
5.18	1931	> 150	7.82	1279	> 300	10.26	975	> 150
5.26	1901	> 150	7.85	1274	> 300	10.28	973	> 150
5.66	1767	> 300	8.01	1248	> 100	10.32	969	> 150
5.73	1745	> 150	8.28	1208	> 200	10.36	965	> 150
6.13	1631	> 150	9.02	1109	> 100	10.54	949	> 100
6.15	1626	> 150	9.05	1105	> 100	10.60	943	> 80
6.18	1618	> 100	9.26	1080	> 100	10.63	941	> 80

Pulsed Distributed Feedback (DFB) Quantum cascade lasers

Wavelength(μm)	Wave numb er(cm -1)	Outp ut pow er(m W)	Wavelength(μm)	Wave numb er(cm -1)	Outp ut pow er(m W)	Wavelength(μm)	Wave numb er(cm -1)	Outp ut pow er(m W)	Wavelength(μm)	Wave numb er(cm -1)	Outp ut pow er(m W)
3.399	2942	4.45 3	2245	5.193	1925	6.135	1629	7.78 8	1284	9.489	1053
3.402	2939	4.45 7	2243	5.214	1917	6.143	1627	7.79 5	1282	9.509	1051
3.45	2898	4.46 1	2241	5.224	1914	6.153	1625	7.80 9	1280	9.529	1049
3.451	2897	4.46 5	2239	5.233	1910	6.156	1624	7.81 9	1278	9.544	1047
3.477	2876	4.47 1	2236	5.24	1908	6.17	1620	7.83 1	1276	9.586	1043
3.48	2873	4.47 5	2234	5.244	1906	6.177	1618	7.85 7	1272	9.598	1041
3.497	2859	4.47 9	2232	5.25	1904	6.214	1609	7.86 9	1270	9.623	1039
3.519	2841	4.48 3	2230	5.255	1902	6.225	1606	7.88 7	1267	9.634	1037
3.536	2828	4.48 5	2229	5.261	1900	6.228	1605	7.90 6	1264	9.655	1035
3.538	2826	4.48 9	2227	5.264	1899	6.242	1602	7.93 3	1260	9.672	1033
3.546	2820	4.49 2	2226	5.266	1898	6.243	1601	7.98 6	1252	9.692	1031
3.549	2817	4.49 8	2223	5.272	1896	6.258	1597	7.99 8	1250	9.72	1028
3.566	2804	4.50 1	2221	5.279	1894	6.262	1596	8.01 6	1247	9.744	1026
3.568	2802	4.50 6	2219	5.289	1890	7.148	1398	8.02 6	1245	9.903	1009
3.605	2773	4.50 9	2217	5.294	1888	7.164	1395	8.05 4	1241	9.921	1007
3.607	2772	4.51 3	2215	5.304	1885	7.176	1393	8.10 1	1234	9.943	1005
3.655	2735	4.51 7	2213	5.306	1884	7.185	1391	8.16 3	1225	9.964	1003

3.724	2685	4.52 1	2211	5.452	1834	7.195	1389	8.22	1216	9.983	1001
4.184	2390	4.52 5	2209	5.486	1822	7.205	1387	8.24 2	1213	10.00 1	999
4.185	2389	4.52 9	2207	5.523	1810	7.217	1385	8.25 2	1211	10.02 9	997
4.188	2387	4.53 4	2205	5.557	1799	7.229	1383	8.26 5	1209	10.04 2	995
4.194	2384	4.53 8	2203	5.592	1788	7.258	1377	8.28 2	1207	10.06 3	993
4.197	2382	4.54 3	2201	5.612	1781	7.268	1375	8.29 2	1205	10.19	981
4.2	2380	4.54 5	2200	5.626	1777	7.285	1372	8.30 1	1204	10.20 6	979
4.204	2378	4.55	2197	5.632	1775	7.289	1371	8.32 6	1201	10.23 8	976
4.207	2376	4.55 4	2195	5.639	1773	7.327	1364	8.33 5	1199	10.25 9	974
4.215	2372	4.56	2192	5.646	1771	7.337	1362	8.35 2	1197	10.28 9	971
4.219	2370	4.56 5	2190	5.651	1769	7.348	1360	8.38 6	1192	10.32 7	968
4.221	2369	4.56 9	2188	5.657	1767	7.354	1359	8.90 2	1123	10.34 2	966
4.226	2366	4.57 4	2186	5.665	1765	7.367	1357	8.94 8	1117	10.37 7	963
4.231	2363	4.57 7	2184	5.669	1763	7.373	1356	9.00 4	1110	10.39 6	961